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# ELECTRIC LIFTS.

S. H. Heywood & Co Ltd





HEA WOODS & CO LTD

CRANES

HEA WOODS & CO LTD

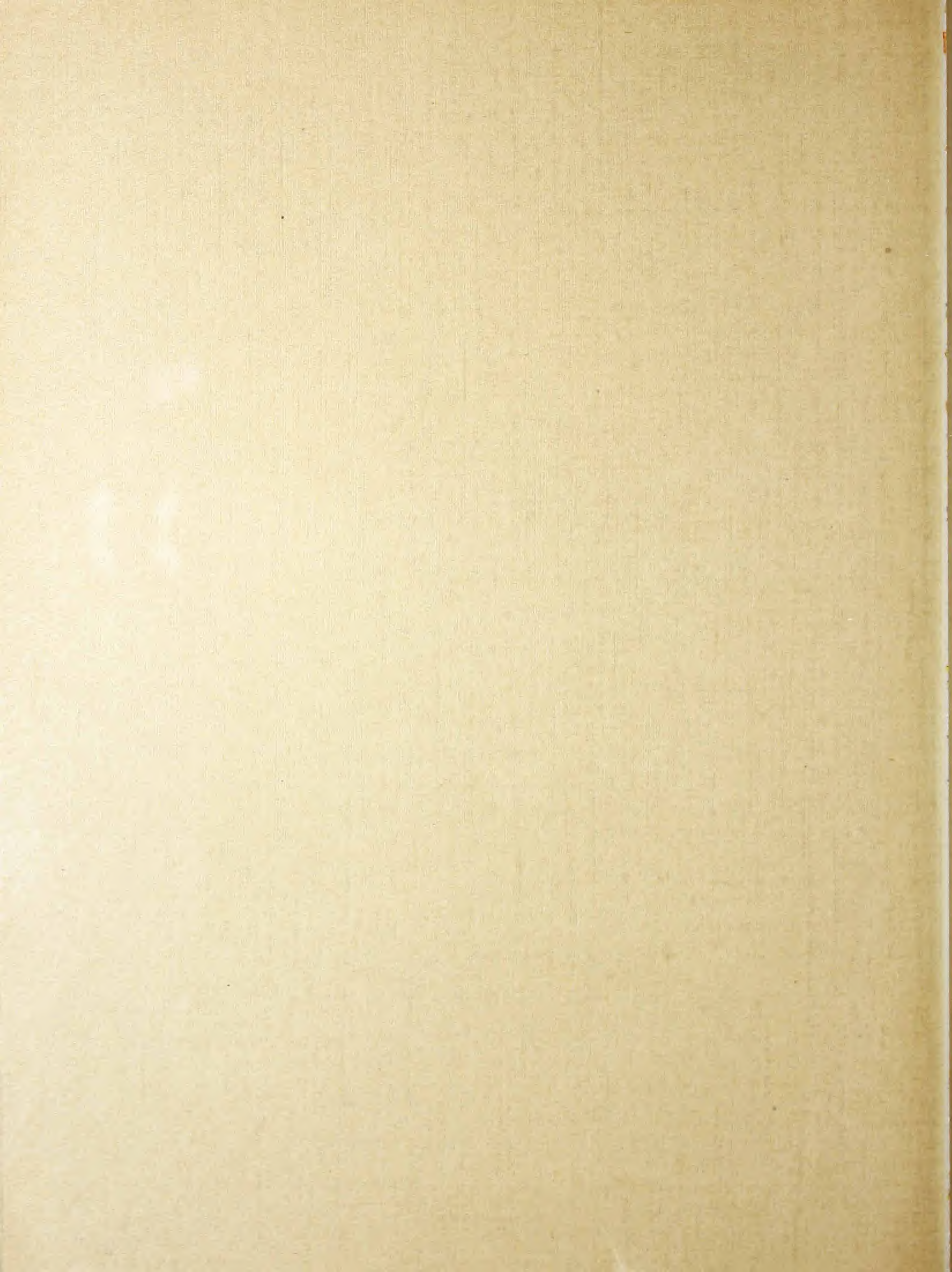


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CCA







WORKS

Telephone No. 48 Heaton Moor.

REDDISH

Telegrams: "Cranes, Reddish."

near STOCKPORT

Code: A.B.C. (5th Edition), Marconi.

# ELECTRIC LIFTS



## S. H. HEYWOOD & CO. LTD.

### BRANCH OFFICES

MANCHESTER

S. H. HEYWOOD & CO., Ltd., Short Street.  
Telephone: City 2518.

GLASGOW—S. H. HEYWOOD & CO., Ltd., 50, Wellington Street. (Mr. Wilson Feather.)  
Telephone No. 443 Central. Telegrams: "Tools, Glasgow."

NEWCASTLE-ON-TYNE—S. H. HEYWOOD & CO., Ltd., Milburn House. (Mr. W. Spence Haswell.)  
Telephone No. 4421 Central.

SWANSEA—S. H. HEYWOOD & CO., Ltd., 11, Cambrian Place. (Mr. W. Atkinson.)  
Telephone No. 563 Central. Telegrams: "Magnet, Swansea."

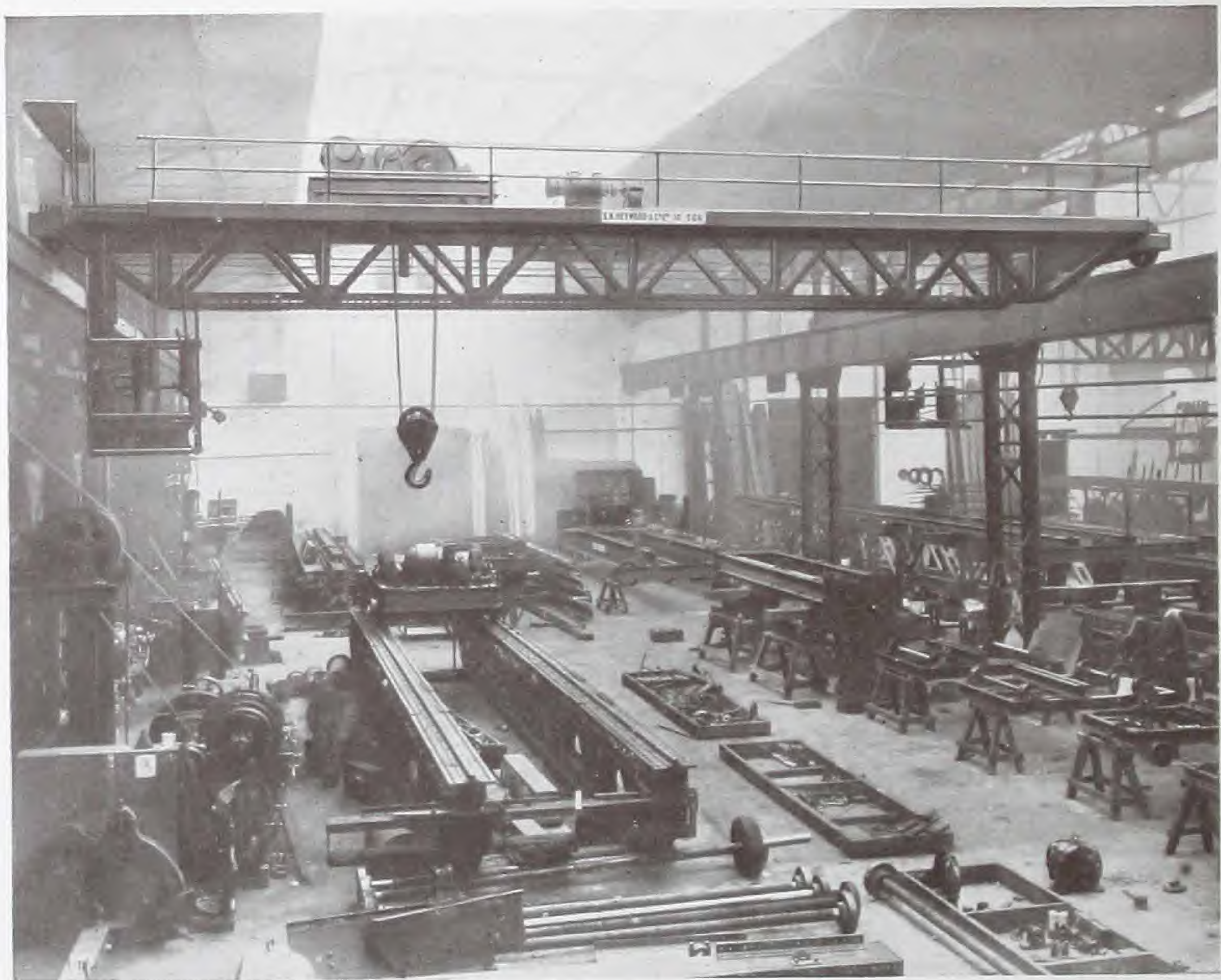
Also in SYDNEY, MELBOURNE, and NEW SOUTH WALES.

LONDON—S. H. HEYWOOD & CO., Ltd., Queen Anne's Chambers, Westminster, S.W.1. (Mr. A. Ingram.)  
Telephone No. 505 Victoria. Telegrams: "Ingramillo, Vic., London."



# S. H. HEYWOOD & CO. LTD.

Latest Addition to our Reddish Works



One of two new erecting bays, each 185-ft. long and 60-ft. wide. Completed in 1920.  
The illustration shows one of our 10-ton Standard "Dust Proof" Cranes.

## LIFTS



# S. H. HEYWOOD & CO. LTD.

## INTRODUCTORY



PROSPECTIVE clients who are not already acquainted with the name and reputation of the firm of S. H. Heywood & Co., Ltd., naturally wish to be assured that we are right and proper persons to be entrusted with their orders for Electric Lifts.

They rightly wish to be convinced that our lifts embody the latest practice in this branch of engineering, that they run efficiently and economically, and that they are thoroughly reliable in the fullest meaning of the word. It is to this rapidly-decreasing section of the public that we respectfully address the following remarks.

For many years our name has been identified with the manufacture of electrically-driven machinery of the highest class.

In arsenals, dockyards, and foundries ; in steelworks, locomotive shops, and works of every description our heavy overhead cranes, traversers, and lifts may be seen busily at work in all parts of the country, saving labour and speeding-up output.

The Admiralty, War Office, and the leading Railway Companies are among our clients, and hundreds of the largest and most successful firms in this country show their appreciation of our services by their repeat orders. A separate department devotes its entire energies to the design and manufacture of our electric lifts, and the same high-class design and sound engineering construction that has made our name famous is embodied in our electric lifts.

The materials used are the best of their respective kinds, and we employ only highly skilled workmen, the majority of whom have served their apprenticeship in our own Works.

**Electrically** our lifts are exceptionally good.

For over thirty years we have been pioneers in the manufacture of electrical control gear of an exceedingly simple design and sturdy construction.

No higher standard is possible in any class of machinery.

In first cost our lifts will be found extremely reasonable and the expenses of upkeep practically a negligible quantity.

## CRANES



# S. H. HEYWOOD & CO. LTD.

## Electric Lifts

The controversy as to the best form in which power should be applied to lifts of the type under consideration was practically settled about fifteen years ago, and it was settled in favour of the electric drive.

In some cotton factories and other works the belt-driven lift is still employed. The deciding factors in these cases being the low cost at which power could be obtained from adjacent shafting, and a certain saving in the initial cost of the installation.

This method of drive has nothing else to recommend it.

The hydraulic lift is at its best when used for short travels.

It effects no saving in running costs, and the bills for repairs and maintenance are usually very high.

Although the first cost is admittedly higher, **the High-Speed Electric Lift** is superseding all others on the grounds of its enormous saving of time, its safety in operation and its reliability when properly designed and built. Few labour-saving appliances pay a heavier dividend on invested capital. As far as the cost of repairs is concerned we will confine ourselves to the electric lifts of our own manufacture, and of these we can say from actual experience that the repairs bill is **very much lower than that with any other form of drive.**

Busily employed and heavily worked electric lifts, installed by ourselves, have run for five and six years without any attention beyond occasional oiling and cleaning and were then, to all appearance, good for many years' service without the necessity for any renewals or repairs.

We are always happy to advise intending clients, and the services of our technical staff in this capacity are entirely at their service.

## PULLEY-BLOCKS



# S. H. HEYWOOD & CO. LTD.



## Methods of Control

### "Switch in Cage"

This is the simplest, and probably the most generally useful method of control; the whole operation of the lift being controlled from the cage.

It can be used for speeds up to 500-ft. per minute, and no difficulty need be experienced in stopping accurately at the various floor levels.

Up to a speed of 160-ft. per minute, a single-speed cage switch is usually sufficient, with the advantage that a controller with the fewest possible number of parts can be used.

Two, or even three-speed cage switches can be used on high lifts.

The switch which we use for this purpose is of an exceedingly sturdy construction and will stand practically any amount of rough usage, and any conceivably possible weak point has been eliminated as the result of long practical experience.

Used in conjunction with our patent controller, it is impossible for the cage attendant to start too suddenly or to damage the motor by an undue rush of current.

The switch is fitted with a powerful and reliable automatic return to the "off" position, which will instantly stop the lift, should the attendant inadvertently release his hold of the handle.

With this system of control, electro-mechanical locks are usually fitted on the doors on the various landings.

It is only when the cage has come to rest opposite one of these gates that the locks permit them to be opened, and the lift cannot start away unless every gate be shut, or, if moving, will come at once to rest should any gate be opened.

## TRANSPORTERS



## Systems of Control

"Push Button":

"Up, Down and Stop"



An advantage of this system is that no attendant is required.

Three buttons as above are placed in the cage and similarly on every floor. The chief difference between the "cage switch" and the "push button" is that with the former system, contact must be maintained during the whole of the time that the lift is moving, whilst with the "push button" only a momentary pressure on the button is required, the lift continuing to move until the stop button is pressed, or until the limit switch comes into action at the top or bottom floor.

A passenger wishing to use the lift will press either the "down" or "up" button according as the cage is at the time above or below him, and as soon as the cage comes level with the floor on which he is standing, he will stop it by pressing the "stop" button. He will then open the gate, step into the lift and close the gate after him in order to remake electrical contact. He will then move up or down as he may require by momentarily pressing the corresponding button.

In cases where the lift is only serving two floors the operator remaining on one floor can send goods to the other floor, depending upon the limit switches to bring the cage to rest.

## TRAVERSERS



# S. H. HEYWOOD & CO. LTD.



## Systems of Control

### "Fully Automatic"

This system is capable of many variations and additional refinements which, to describe fully, would require more space than we have here available. It is best to consider each case upon its merits, but generally our advice is to cut out all unnecessary complications, and to make the installation as simple and straightforward as possible.

With our standard automatic lift we fit one push button upon each floor, and the intending passenger by pressing one of these buttons will bring the cage to the floor upon which he is standing.

On entering the cage he will find a series of buttons, there being one for each floor served.

By pushing the button corresponding to the floor upon which he wishes to alight, the cage moves up or down, as the case may be, until it automatically comes to rest at the desired floor.

In this system, as in others, we make it impossible for the gates to be opened unless the cage is opposite the gateway, and equally impossible for the cage to be moved unless all the gates are shut.

In another automatic system, we fix on each landing a series of pushes instead of in the cage. By this means the cage may be sent up or down from any floor to any other floor without the necessity for anyone to travel with it. Finally we have, in some cases, fixed a full series of push buttons on every floor in addition to the push buttons in the cage.

## LIFTS



# S. H. HEYWOOD & CO. LTD.

## The Controller

The controller is probably the most important part of an electric lift installation.

Certainly it is the place where ninety-nine out of a hundred breakdowns and stoppages occur on the average lift.

In the early days of our manufacture of electric lifts we were obliged, owing to the pressure in our electrical department, to buy our controllers outside.

Although we tried many makes the results were much the same. In a short time, sometimes within a few weeks, appeared the troubles of excessive arcing, burning of contacts, sticking and bad contacts due to deformation during work, sometimes singly and sometimes in combination. And to our surprise, we found that makers in general of this sort of apparatus considered that such experiences were the natural portion of users of electrical control gear.

We decided to design and make our own lift control gear, and we started with the axiom that unless an apparatus be absolutely sound mechanically it could not be sound electrically.

As a corollary we left to others the use of brass strip, flat phosphor-bronze springs for carrying current and maintaining contact, sparking tips and the watchmaker's screws all so dear to the heart of the average electrician.

And perhaps most important of all, we took the somewhat unusual view that reliability and long life in working were of more importance than the saving of a few ounces of copper.

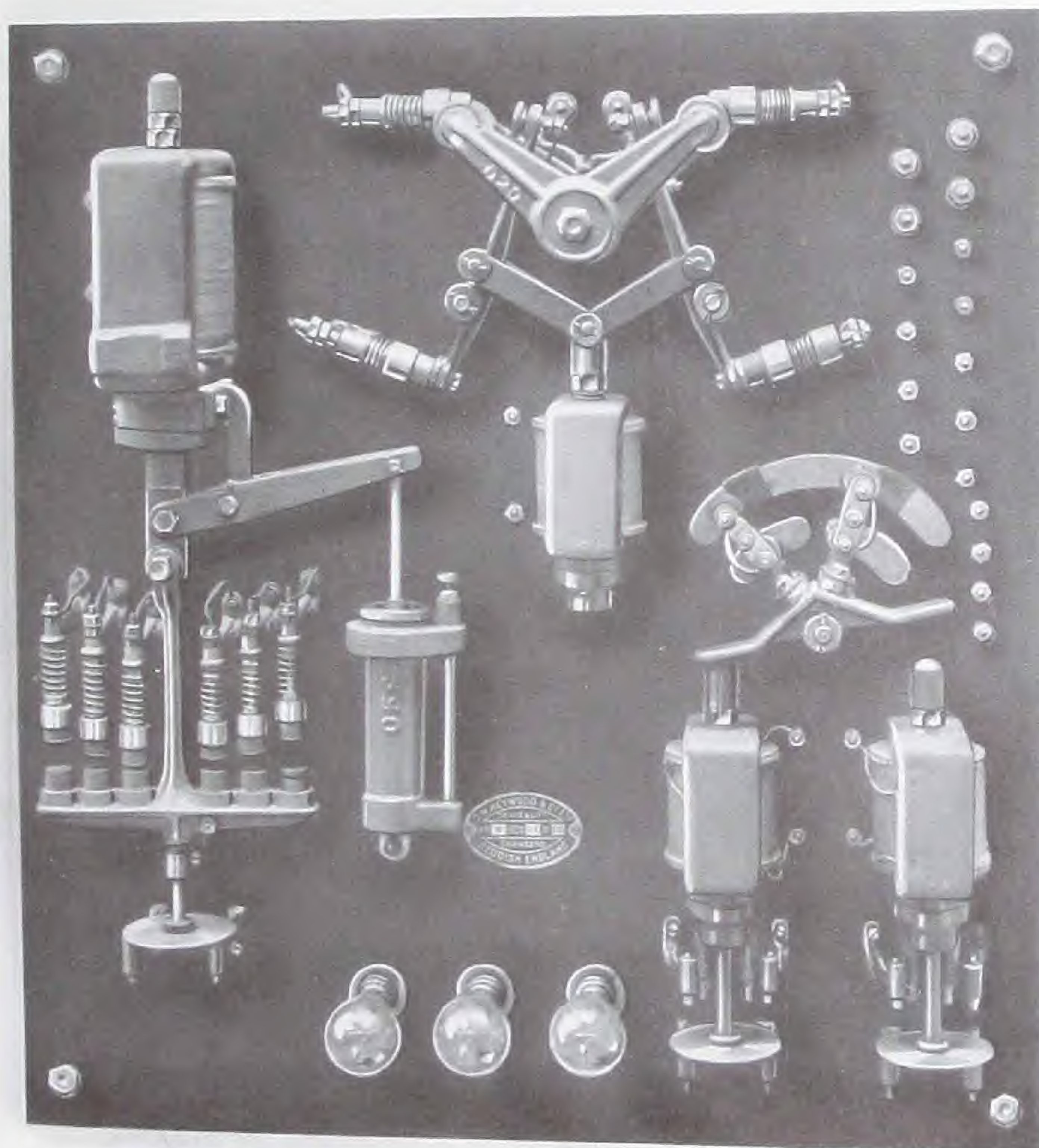
We made our first lift controller over seven years ago, and although we have them working in all parts of the country **we have not as yet supplied a single replace part.**

## CRANES



# S. H. HEYWOOD & CO. LTD.

## A Controller with a Record



Two of these controllers have been operating two 30-cwt. Goods Lifts at one of the Co-operative Wholesale Society's warehouses, averaging 100 tons per day per lift for the last six years.

Not a single contact or any other part has been replaced, and they are, to all appearance, good for another ten years' unremitting service.

## PULLEY-BLOCKS



# S. H. HEYWOOD & CO. LTD.

## The Controller—*continued*

We shall be pleased to show to prospective clients controllers on heavily-worked lifts in busy factories that have been in daily use for over six years that, beyond an occasional wiping down, have not cost a penny piece in maintenance.

They may have lost some of their pristine brightness and polish, but in every other respect they are as good as on the day when they were first put to work.

Space is not available to describe in detail the methods by which we obtained these results, but one important factor is the breaking of all circuits on a single specially-designed switch, and upon this switch we bring to bear simultaneously four devices for extinguishing the arc.

In addition

The controller is mounted upon a heavy slate or marble panel.  
All other insulation is solid mica.

The main current-carrying contacts are copper and carbon, and provide exceptionally large contact areas.

The actual contacts are self-adjusting and cannot decrease in working.

The solenoids are provided with a large margin of excess "pull."  
Every part is easily accessible for cleaning or adjustment.

The motor is started with a heavy series resistance which is automatically cut out as the lift accelerates.

After the motor has stopped, it cannot be started again until the series resistance has again been inserted.

All movements of the controller are absolutely interlocked.  
The resistances provided are so liberally rated that it is impossible to overheat them or burn them out.

The dash pot cannot leak.

## TRANSPORTERS



# S. H. HEYWOOD & CO. LTD.

## Safeguards against Overtravel



In addition to the limit switches which cut off the current from the control circuit when the cage reaches either the top or bottom floor, we fit on every installation a special series limit switch which cuts off the current from the whole of the plant.

Emergency apparatus such as this seldom or never comes into operation, and most designers seem to rely upon this fact in getting out their designs. The result is that the average emergency device is cut down to dangerous limits in its vital parts.

Our series current limit switches, are, like all our other electrical apparatus, designed upon such lines that they are capable of daily and continuous use without any possibility of their deterioration.

It is only by this means that they may be absolutely relied upon to act in an unexpected emergency.

The switch acts by gravity, which we are justified in regarding as a more reliable and constant force than that supplied by the release of a spring. The illustrations render unnecessary any verbal description of the power and capacity of these switches.



## TRAVERSEERS



S. H. HEYWOOD & CO. LTD.

## The Winding Engine

We wish to draw special attention to our winding engines.

We have always regarded the average lift-makers' designs as being too light and flimsy, and our opinion has been reinforced by the frequent accidents which occur in the shape of broken shafts and other breakdowns.

Our winding engines are designed and built on the heaviest traction and haulage lines.

The wheel shafts, usually supported upon three bearings, are made strong enough to support the full load, should the effective support be reduced to that of only two bearings through the sinking of the building or through other causes.

The main casting, which is extended to take the motor, is exceptionally strong and rigid, and where an outside bearing is used it is made adjustable. The gear wheel is of phosphor-bronze with a heavy cast-iron centre. The worm and worm shaft are turned and cut from a single high carbon steel forging.

We place the worm shaft **above** the worm wheel, and we do so advisedly : In this position more perfect lubrication can be assured since the worm wheel dips several inches into the oil bath, and both worm and wheel are readily accessible for inspection ; we avoid the trouble from stuffing boxes and glands on the worm shaft with their alternative troubles of additional unnecessary friction or constant oil leakage.

Further, contrary to the general practice, the worm shaft bearings are split and adjustable for wear.

All bearings are lined with heavy gun-metal bushes.

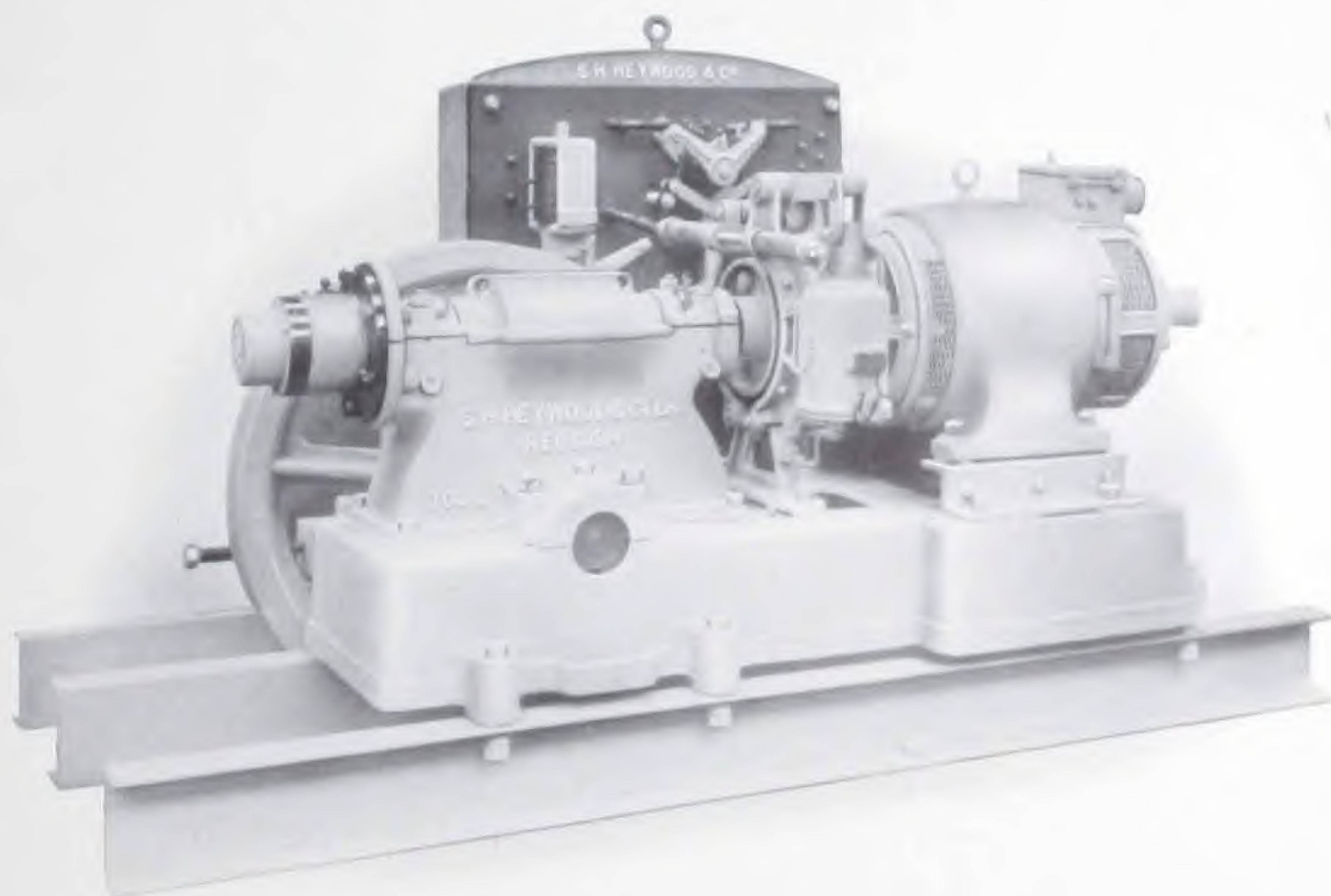
The end pressure of the worm is taken upon a double-thrust adjustable ball bearing of the latest type.

LIFTS



S. H. HEYWOOD & CO. LTD.

No. 2 Size Standard Winding Engine



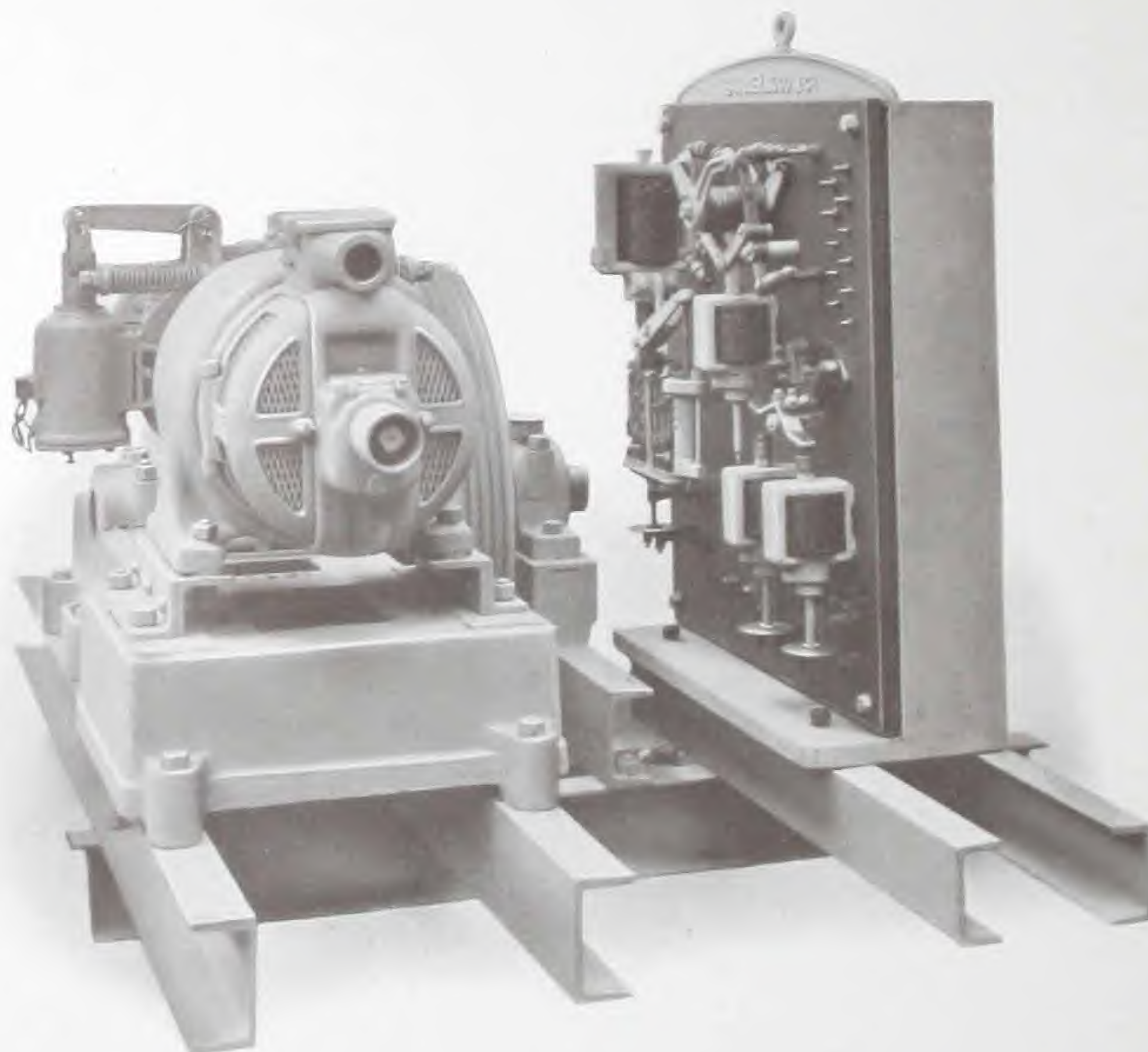
This illustration gives an excellent impression of the depth of the bedplate, and the general sturdiness of our designs. These Winding Engines are busily at work in all parts of the country with satisfaction to our clients and with credit to ourselves.

CRANES



# S. H. HEYWOOD & CO. LTD.

Our No. 2 Size Winding Engine with Controller



Note the heavy rolled steel joist placed as a reinforcement under the channels supporting the Winding Engine.

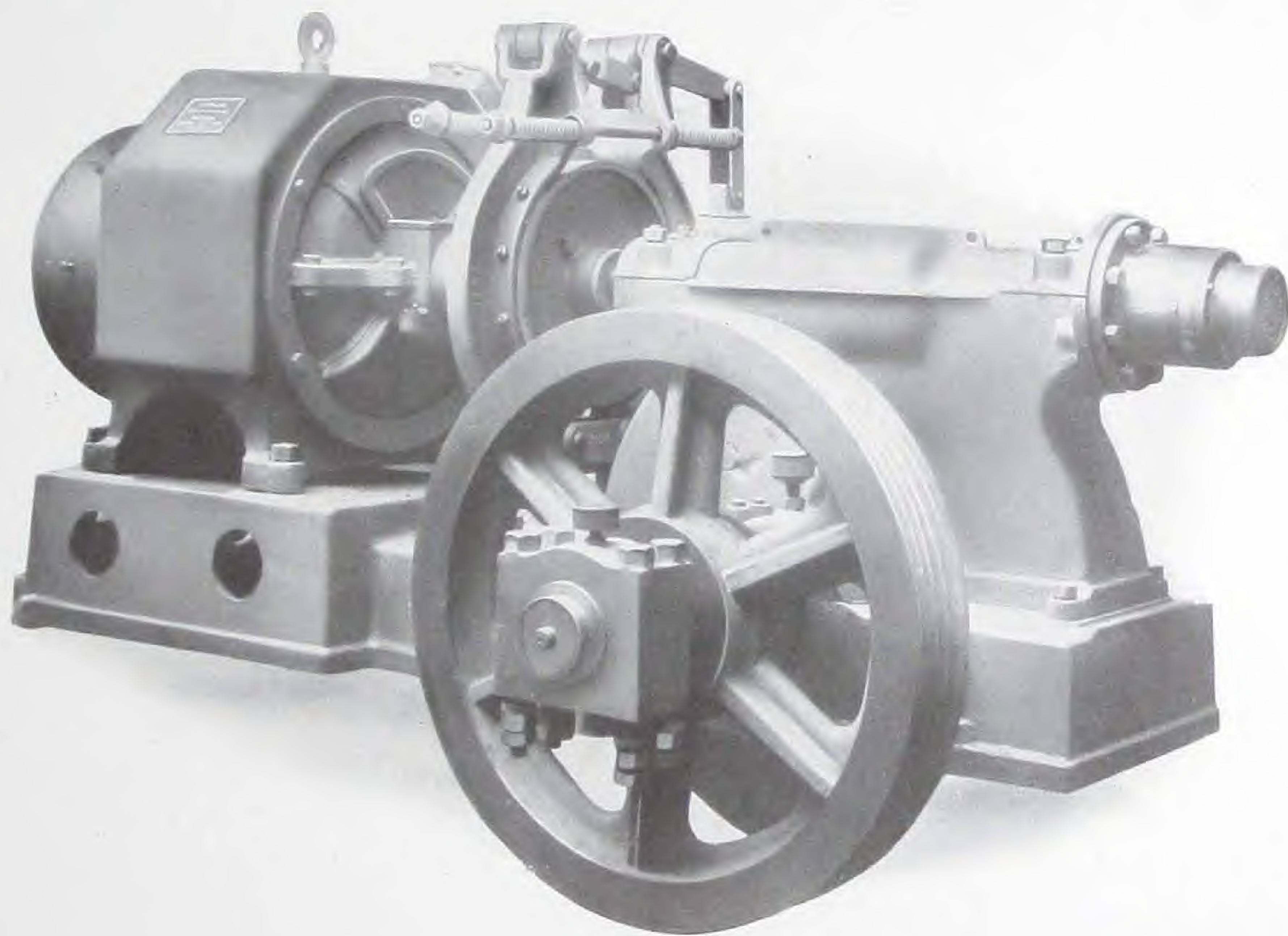
This reinforcing joist is built into the wall at both ends with the object of preserving absolute alignment of the engine bearings under widely varying loads. This is our standard arrangement.

## PULLEY-BLOCKS



S. H. HEYWOOD & CO. LTD.

Our No. 3 Size Winding Engine



This illustration is an actual reproduction of one of the two Winding Engines supplied by us in connection with two 3-ton Cupola Lifts which we installed in one of the world's largest steel works.

TRANSPORTERS



## Brakes

There are several distinctive points about our brakes that are well worthy of attention.

They are the result of an exceptionally wide experience with brakes on all classes of electrically-operated machinery, and are uniform in design with the brakes which we use on our heavy overhead travellers up to 100 tons capacity.

There is absolutely no chattering in use, a qualification which is materially assisted by bringing the brake arm fulcrums close together, and by embracing a large proportion of the circumference of the brake drum.

The braking stresses are purely torsional, and thus put no additional load on the worm shaft bearings.

The brake arms are lined with "Ferodo" held in position by countersunk-headed brass bolts.

The springs are in compression, and will continue to do their work even if broken in several places.

The solenoid has a large margin of pull.

The plunger is designed to give a dash-pot action, and is thus perfectly silent in action. Further than this, it has a stroke of over two inches through which it will exert its rated "pull."

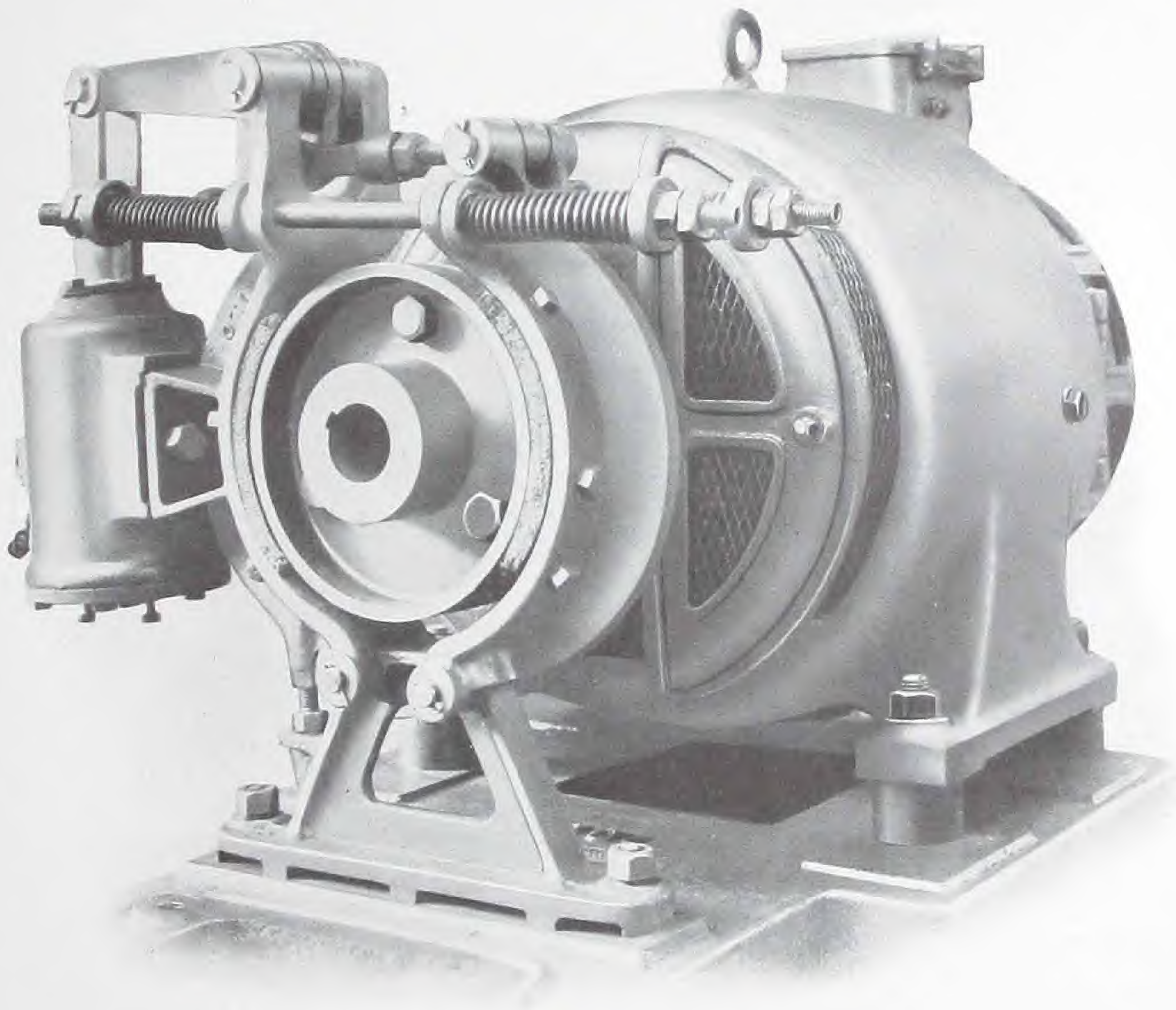
This is a marked improvement over the usual brake as applied to lifts, with its plunger stroke of about one-half inch, and which needs constant adjustment to compensate for the wear of the brake lining.

With regard to the strength and rigidity of its parts, it is only necessary to refer the reader to the illustration on the opposite page.



# S. H. HEYWOOD & CO. LTD.

## Brake on our No. 2 Winding Engine



This brake not only gives instant response to the operations of the controller, but will immediately stop the winding engine and hold the cage on failure of the current from any cause whatsoever.

## LIFTS



# S. H. HEYWOOD & CO. LTD.

## Standard 1-Ton Goods Cage



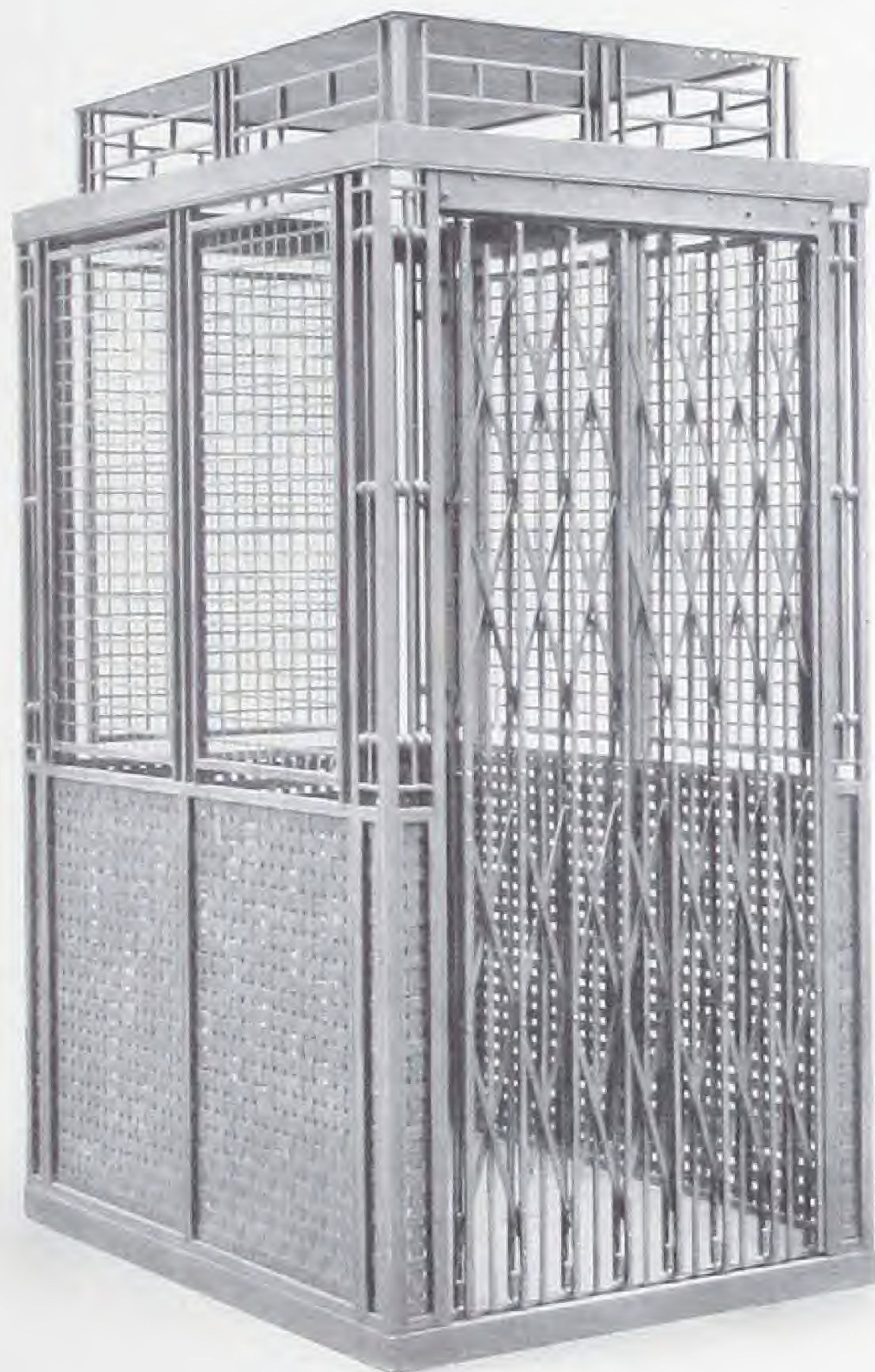
Built of heavy rolled-steel sections bolted together.  
Lined with polished tongued and grooved pitch-pine boards.  
The lower portion of the sides is protected with planished steel-plates.  
The floor is covered with maple boards.  
A very substantial job with practically unlimited capacity for resisting hard wear.

## CRANES



# S. H. HEYWOOD & CO. LTD.

A Typical Passenger Cage, constructed of  
Ornamental Wrought-Iron Work



We are in a position to offer to our clients a wide variety of designs for passenger cages. Some are made of polished mahogany or teak, and richly upholstered, others are of rare woods, elaborately carved.

## PULLEY-BLOCKS



A decorative border made of a chain of links surrounds the entire page. The links are connected in a continuous loop, with some links being larger and more prominent than others, creating a textured, metallic appearance.

S. H. HEYWOOD & CO. LTD.

## The Safety Gear

As the safety of life or limb may depend upon the reliability in action of the safety gear, first cost is quite a secondary consideration.

After studying practically every design of safety gear for lifts, made in this country or America, we did not consider any of them quite up to the standard of our other manufactures either in their design or in the record of their subsequent performances.

We were again compelled to get out original designs of our own.

The toothed grips are wedge-shaped, and are carried in massive steel castings which in turn are bolted to the suspension channels of the cage. They are also rigidly attached to the bottom of the cage by means of four steel tension members.

Any undue stretching or breakage of a single rope will instantly bring the safety gear into action.

The two grips are independent of each other in action, but are simultaneously shot into the wood guides. We thus avoid a common trouble when both grips at opposite guides are fastened to the same shaft. While in the latter case both grips will move only through the same distance, a greater movement may be required of one grip than the other.

In our design both grips come against the guides simultaneously whatever be the required movement in either case.

The safety gear may be tested and put into action by the attendant without any necessity for leaving the cage. In the same way the safety gear may be released and reset, the grips being released by allowing the cage to travel upwards through a few inches.

This safety gear has been tried out in actual work under every conceivable condition **and has never failed.**

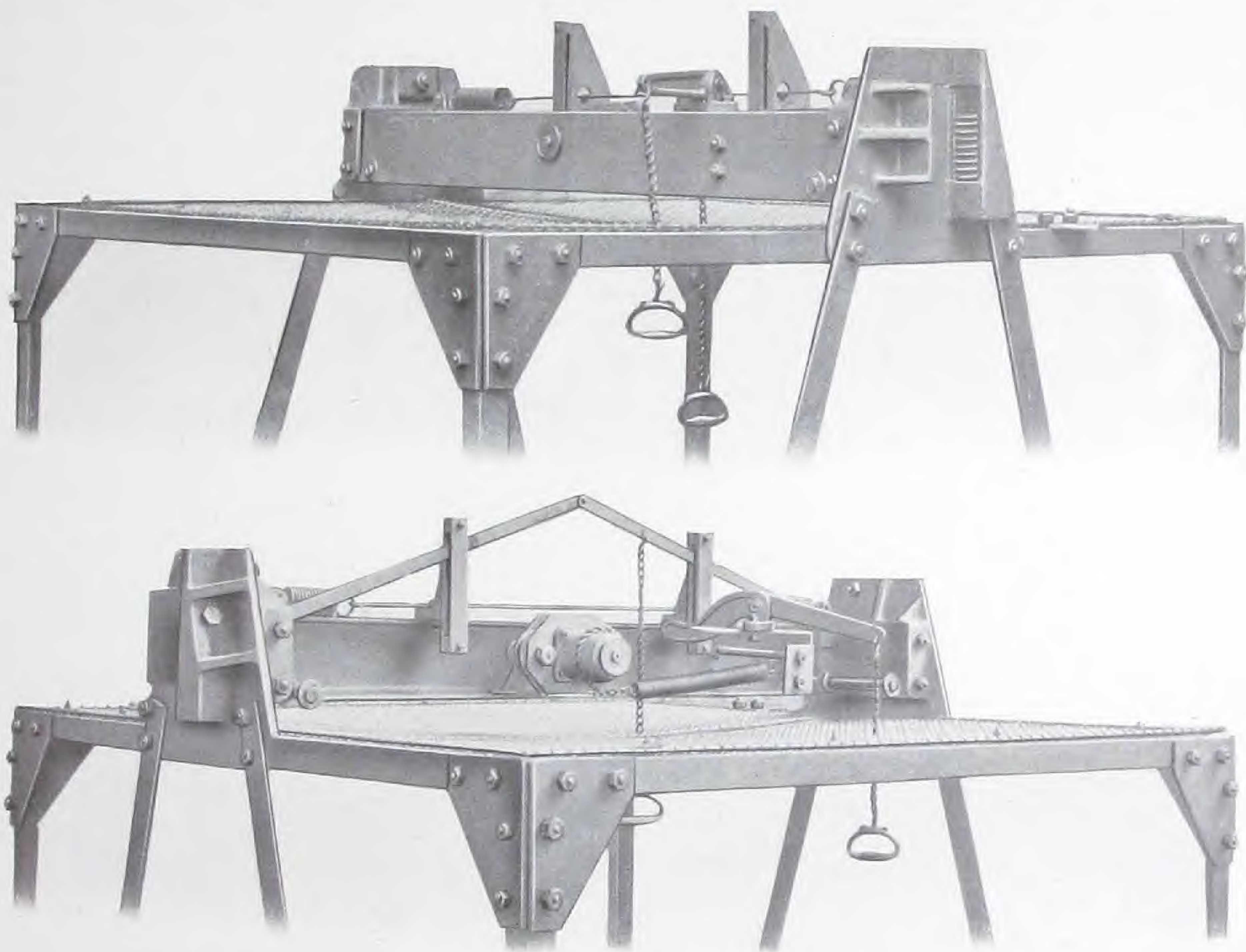
Our safety gear is equally adapted for use on wood or steel guides.

TRANSPORTERS



# S. H. HEYWOOD & CO. LTD.

## Standard Safety Gear for use with Wood Guides



The upper illustration shows the safety gear set out of action. The lower shows the gear with grips in action, one suspension channel being removed in order to show the details of the gear.

## TRAVERSERS



# S. H. HEYWOOD & CO. LTD.

## The "V" Wheel Drive

It will be noted that the "V" wheel drive is shown in most of our illustrations. This is our standard arrangement, and we strongly recommend its use in general.

We have eliminated the use of jockey pulleys, and make the driving wheels as large in diameter as possible.

Not only does this method of drive give long life to the ropes, but it carries with it an additional safeguard against overwinding.

Should all other safeguards fail to stop the lift, the cage or the balance weight, as the case may be, will come to rest upon the buffers at the bottom of the well hole, and the tension on the ropes being thus relieved, they will simply slip round in the grooves in the driving wheel, should the latter continue to revolve.

We have, however, installed the drum form of drive in special cases where our standard drive was impracticable of application.

## Ropes

The lifting ropes are of specially-selected flexible plough steel, and have a factor of safety of not less than 10 to 1 when fully loaded. In the case of passenger lifts the ropes have a factor of safety of 20 to 1 when fully loaded.

## Buffers

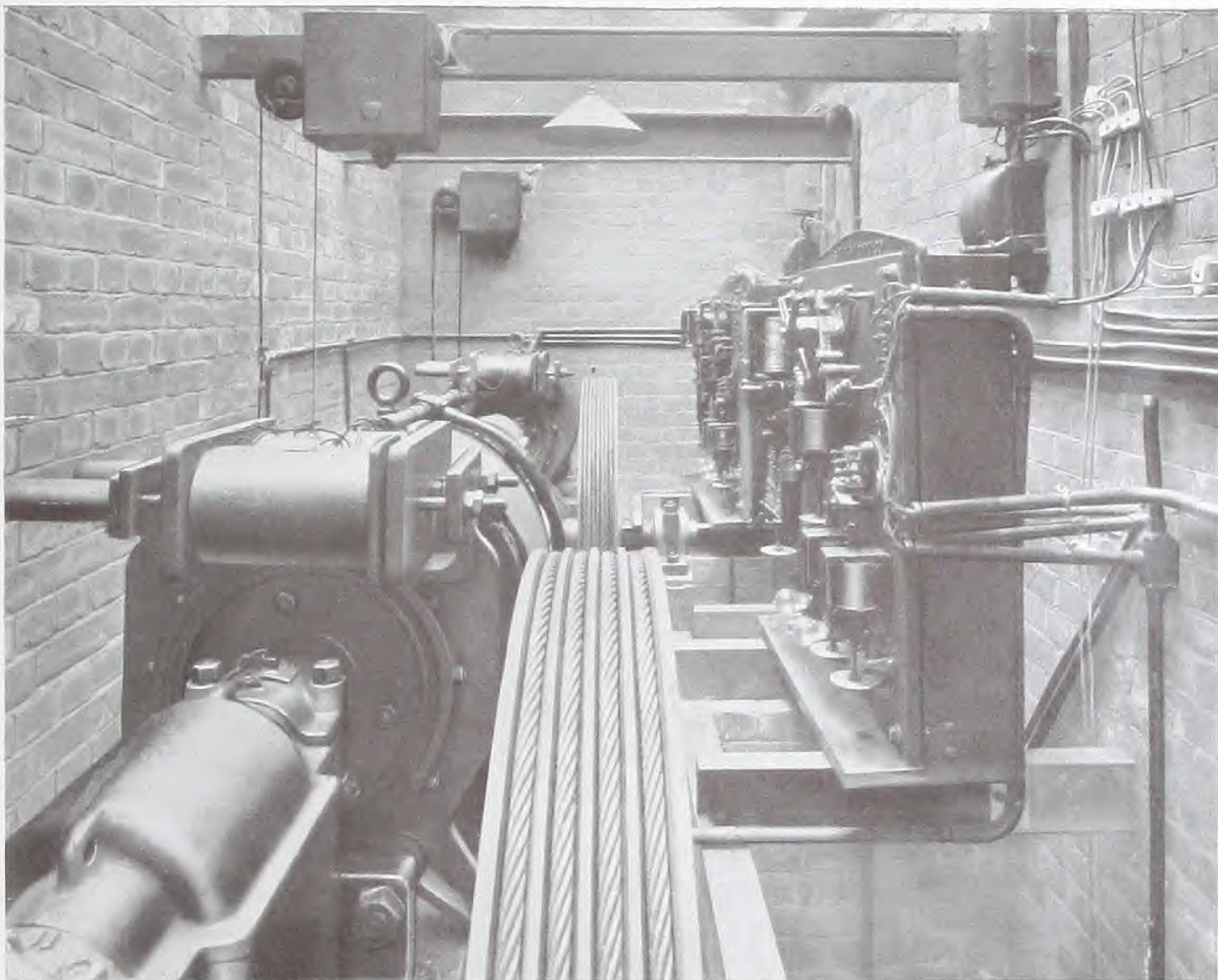
In every case we fix at the bottom of the well hole cast-iron buffers containing a powerful steel spiral spring which will gently bring the cage to rest should overrunning take place due to negligence on the part of the attendant.

## LIFTS



# S. H. HEYWOOD & CO. LTD.

## Engine Room over two 30-cwt. Goods Lifts



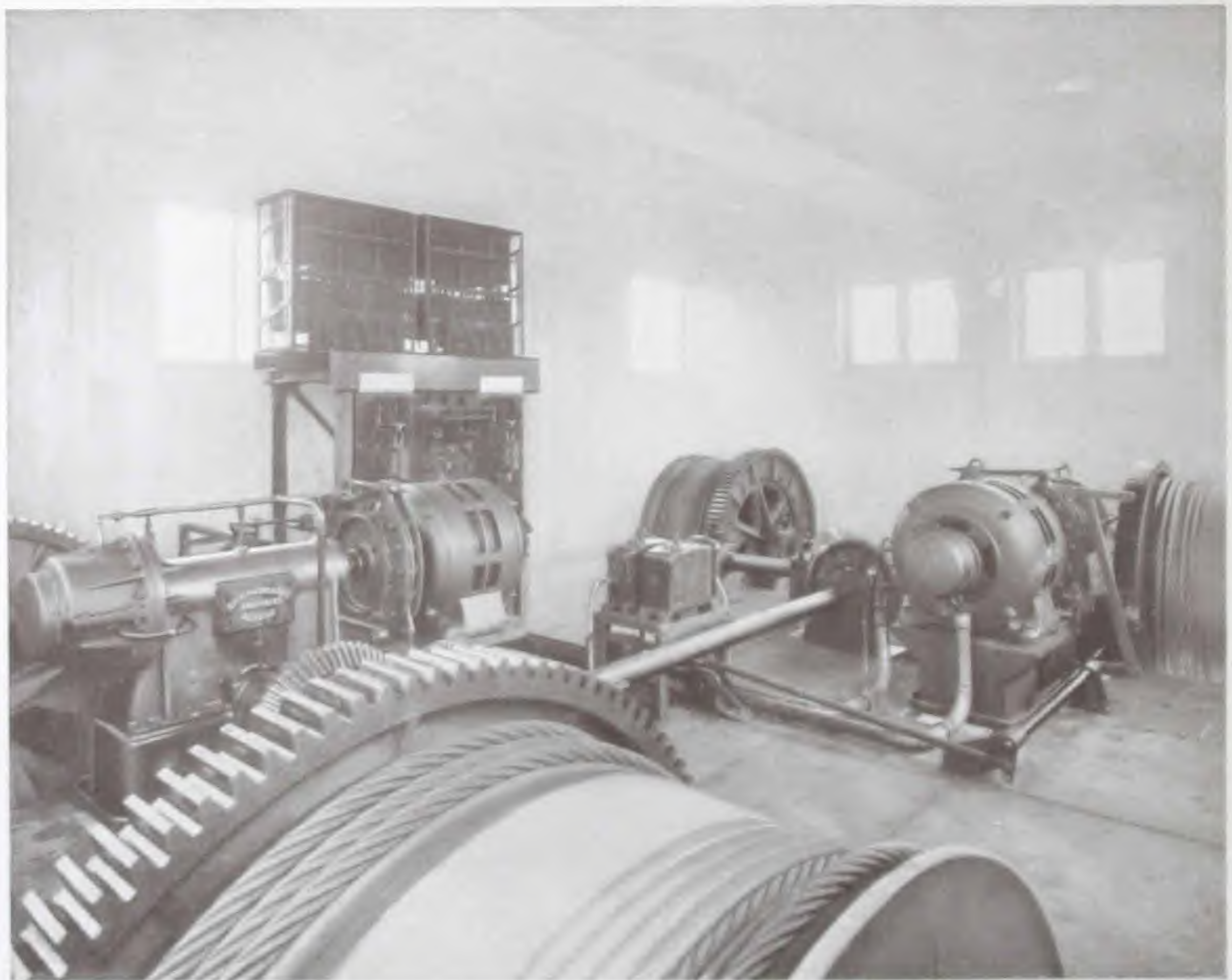
These Lifts are at work in a large factory in the South of England. They give an excellent impression of our "V" wheel drive. The controllers are of our own design which has set a new and higher standard for lift controllers in general.

## CRANES



# S. H. HEYWOOD & CO. LTD.

## 240 Horse-Power Engine Room



This is one of the two Engine Rooms serving the two Lifts illustrated on the opposite page. There is a separate winding drum over each corner of the cage, and the whole is driven by two 120 H.P. motors working in parallel on a 500-volt, alternating current circuit. This is our patented arrangement.

## PULLEY-BLOCKS



# S. H. HEYWOOD & CO. LTD.

## Two 30-Ton Waggon Lifts



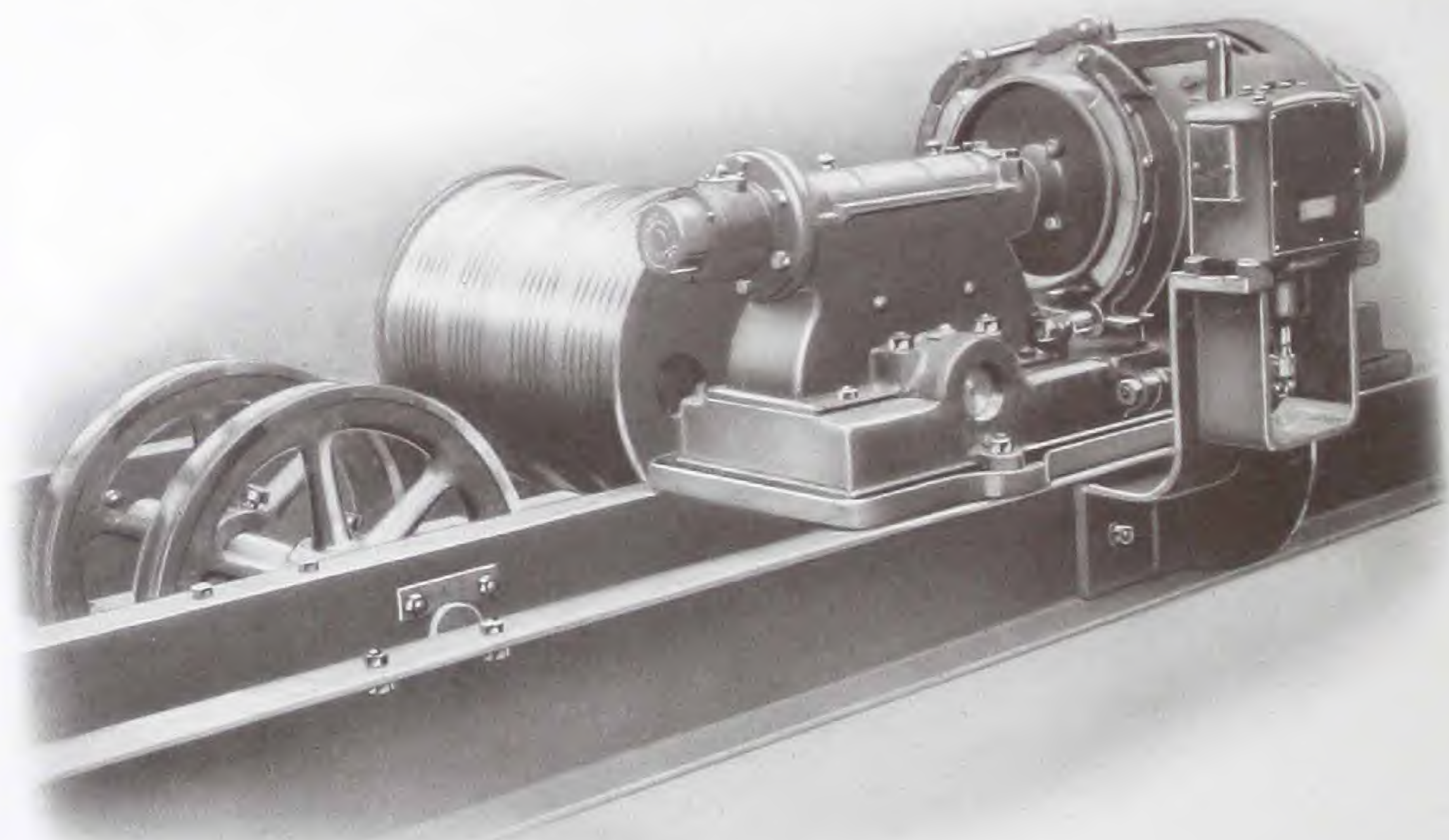
These Lifts were erected by us for the Great Western Railway Co., at their Moor Street Station, and are used to lift fully-loaded railway wagons through 60-ft. from the low level to the high level permanent way.  
The speed of Lift is 125-ft. per minute.

## TRANSPORTERS



S. H. HEYWOOD & CO. LTD

An Instance of the Drum Drive



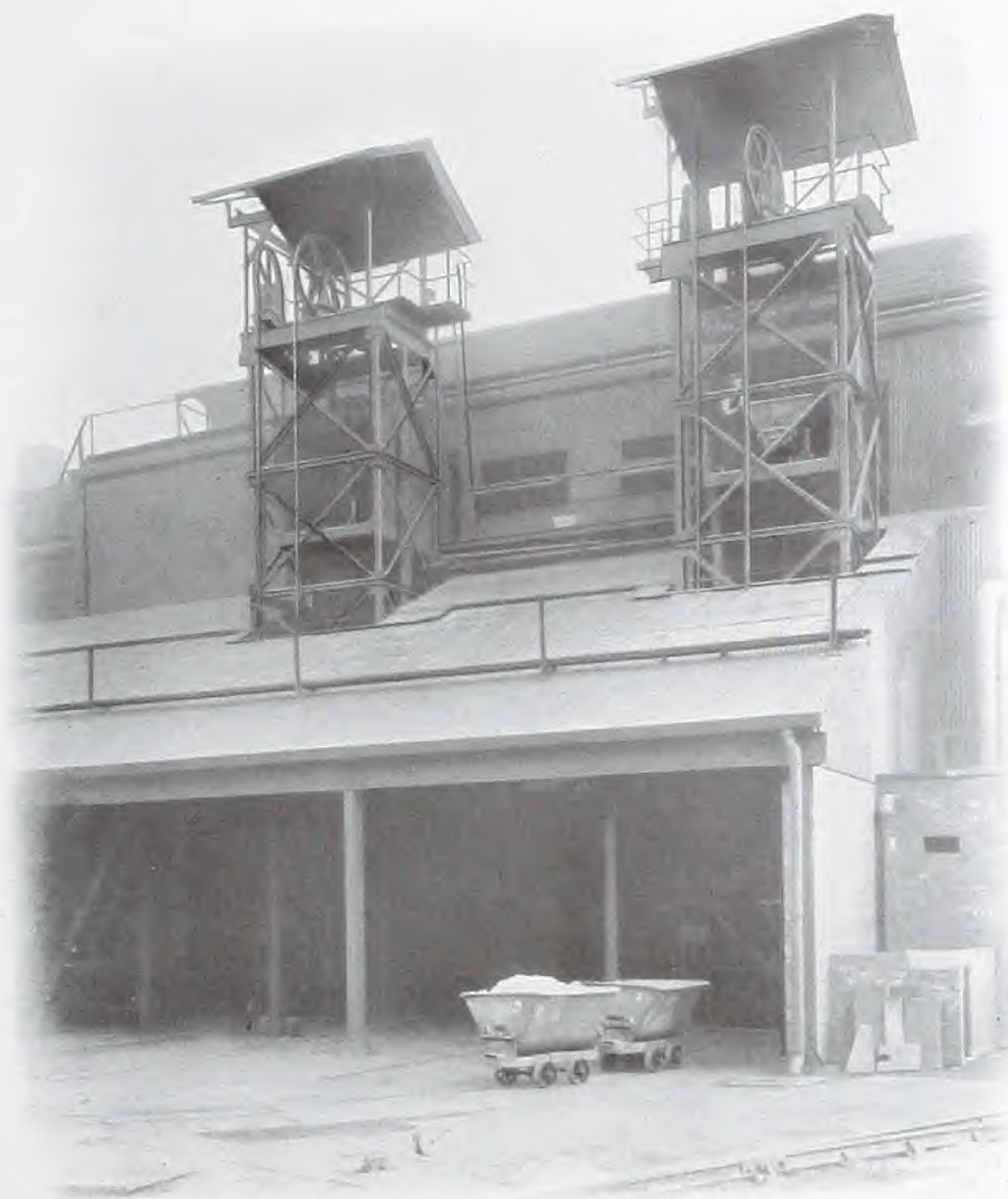
This Winding Gear is one of a number which we have supplied to the Great Western Railway Co. for operating 30-cwt. Goods Lifts.

TRAVERSERS



# S. H. HEYWOOD & CO. LTD.

## Two 3-Ton Cupola Lifts



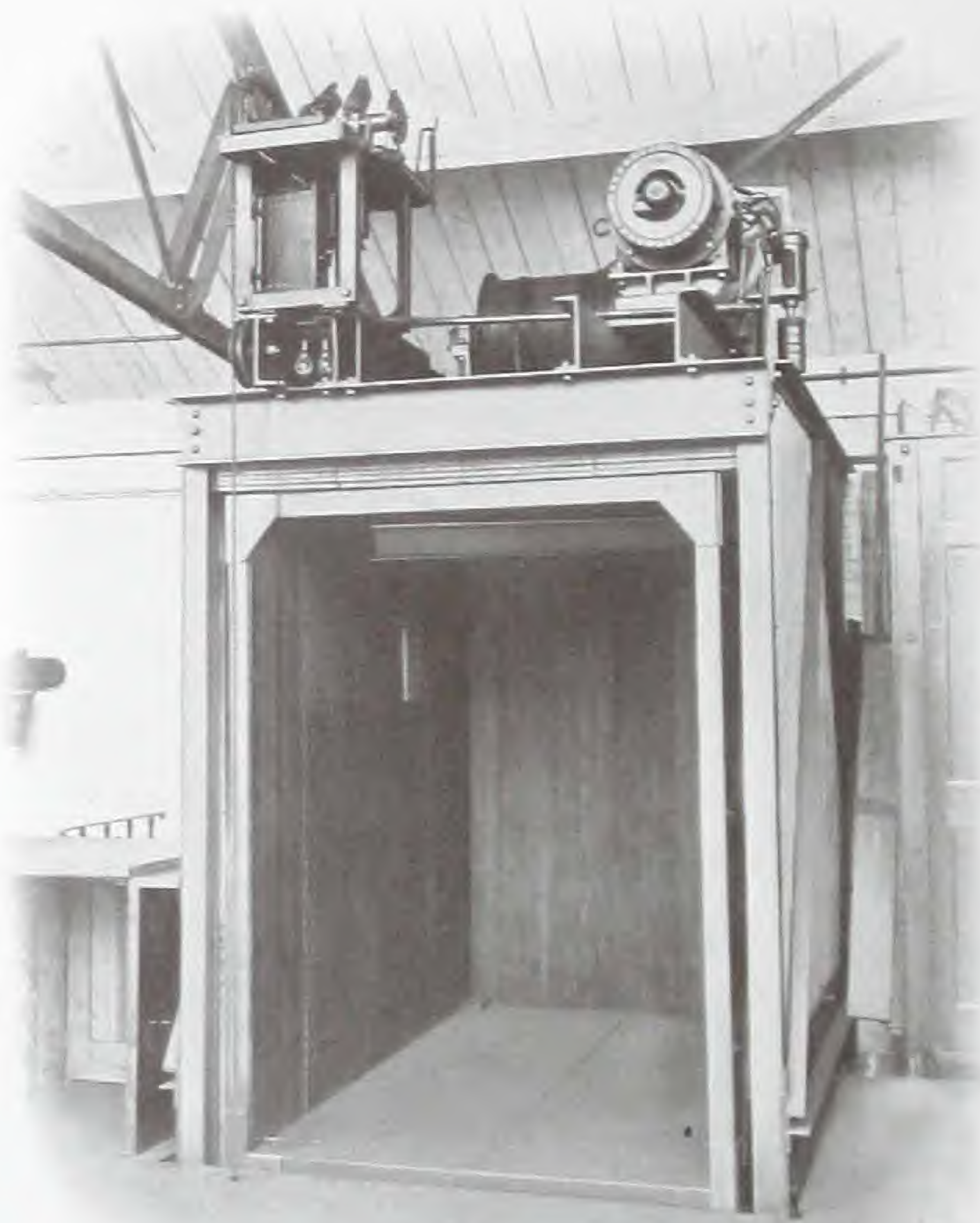
The Lifts were supplied and erected by us for use in a large foundry in the North of England. We make a speciality of Cupola Lifts and have developed a new system of control which is absolutely safe and dependable in the hands of unskilled labour.

## LIFTS



# S. H. HEYWOOD & CO. LTD.

## 30-Cwt. Goods Lift



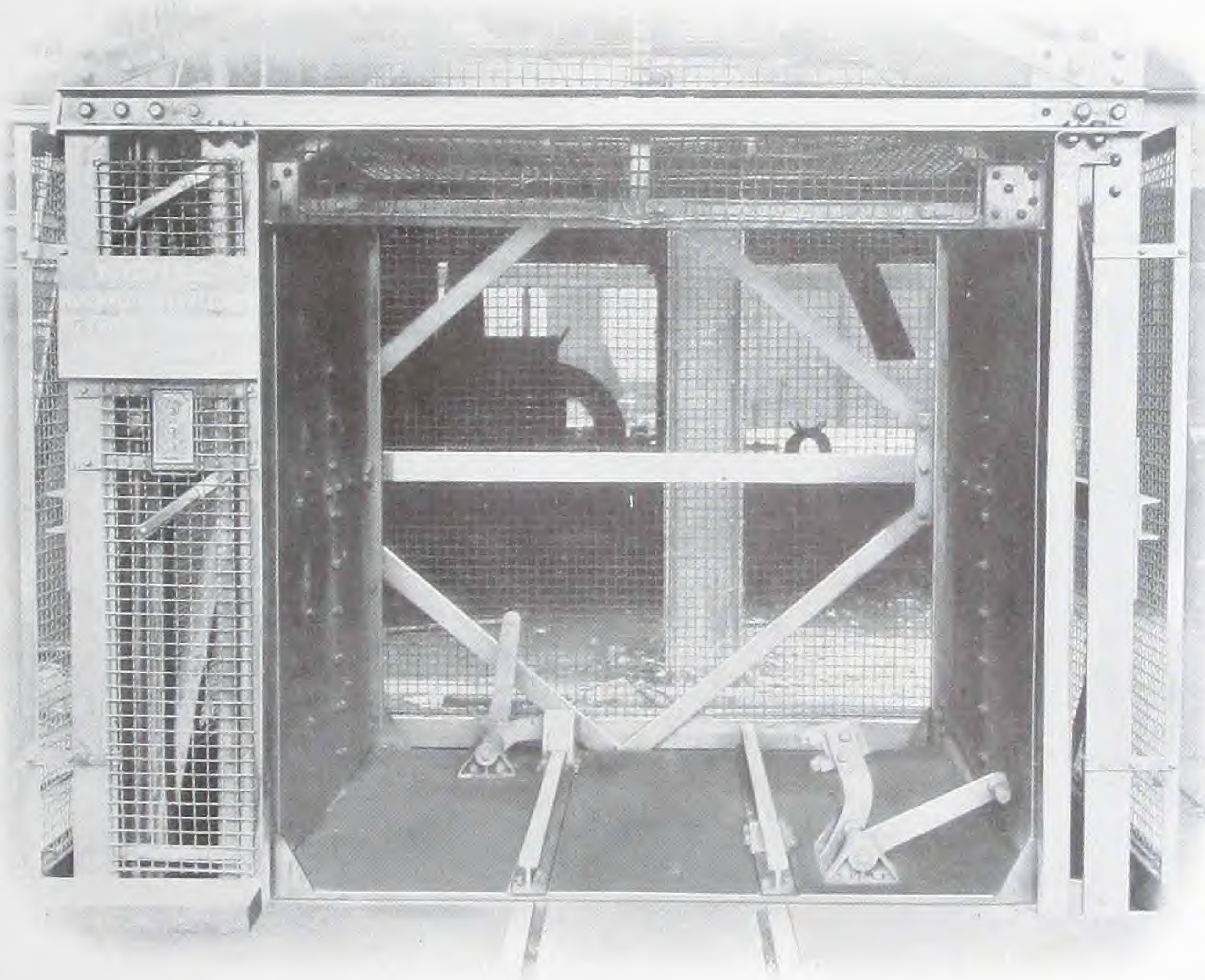
This Lift was supplied by us to the Great Central Railway  
Co. for use in one of their works stores.  
It has a full load capacity of 30-cwt.

## CRANES



# S. H. HEYWOOD & CO. LTD.

## Cupola Lift in Steel Works



The object of this illustration is to show the safety skids which hold the trucks in position. These are of a special design both mechanically and electrically.

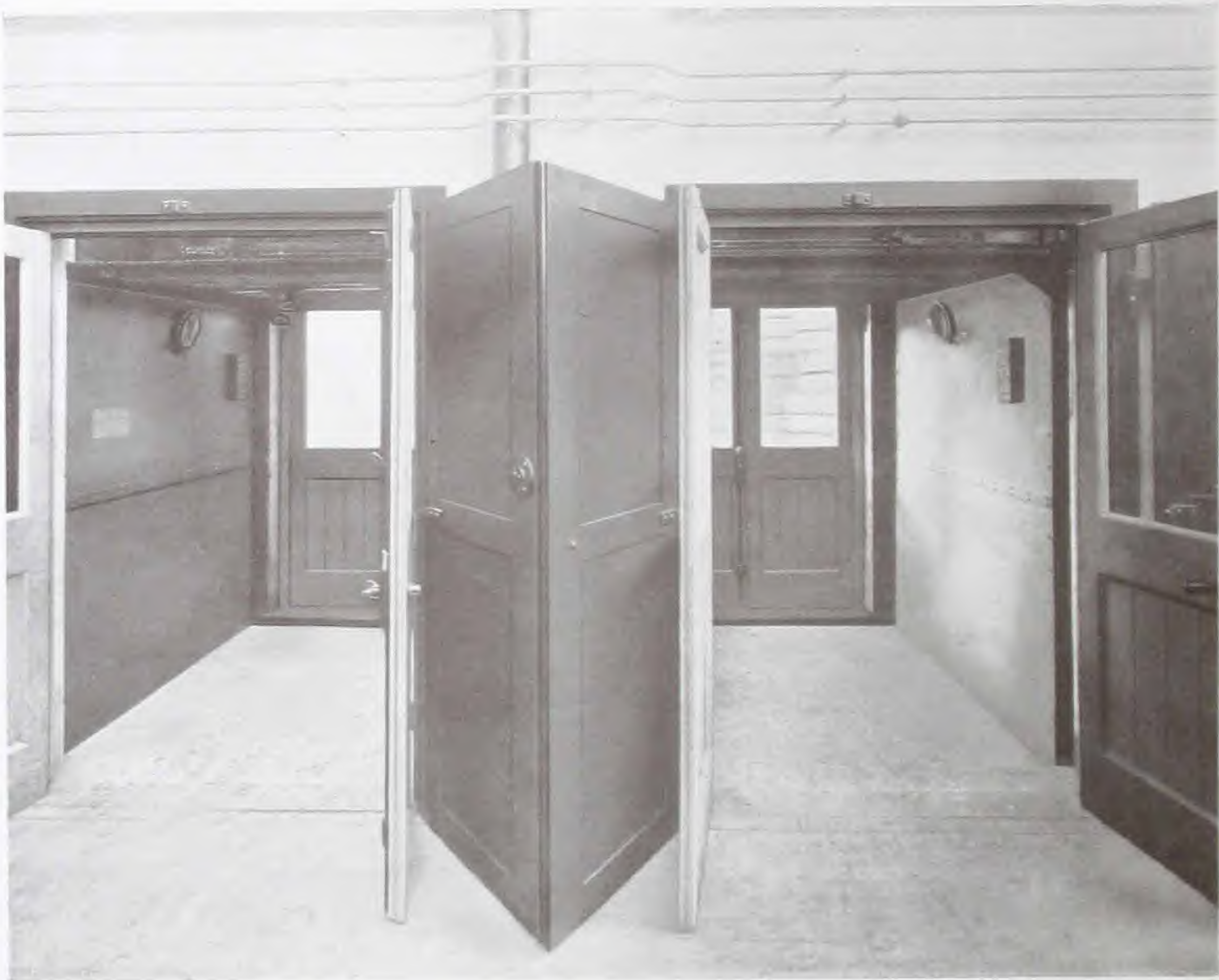
They operate a switch beneath the cage and unless the skids are resting upon the rails the cage cannot be moved.

## PULLEY-BLOCKS



S. H. HEYWOOD & CO. LTD.

## Two 2-Ton Lifts in a Busy Factory



All-steel cages with two entrances. Additional steel fire-proof doors fitted with double bolts and electro-mechanical locks.

TRANSPORTERS



# S. H. HEYWOOD & CO. LTD.

## Particulars which should accompany Orders and Enquiries for Electric Lifts

Maximum load to be lifted.

Supply voltage.

If alternating current, the number of phases and the periodicity.

Total height of the well hole.

Size of well hole.

The number of floors.

The height from the level of the top floor to the top of the well hole.

Depth of well hole below bottom floor.

If collapsible gates are required, state number and size of opening.

If possible an architect's drawing should be supplied.

The system of control desired.

## TRAVERSEERS



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